

SEQUENCE LISTING



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(1) GENERAL INFORMATION:

(i) APPLICANT:

- (A) NAME: Leadd B.V.
- (B) STREET: Wassenaarseweg 72
- (C) CITY: Leiden
- (D) STATE: Zuid-Holland
- (E) COUNTRY: the Netherlands
- (F) POSTAL CODE (ZIP): 2333 AL

- (A) NAME: Noteborn, Mathieu Hubertus Maria
- (B) STREET: Sternstraat 15
- (C) CITY: Leiderdorp
- (D) STATE: Zuid-Holland
- (E) COUNTRY: the Netherlands
- (F) POSTAL CODE (ZIP): 2352 EH

- (A) NAME: Damen-van Oorschot, Astrid Adriana Anna Maria
- (B) STREET: Berliozplein 19
- (C) CITY: Berkel en Rodenrijs
- (D) STATE: Zuid-Holland
- (E) COUNTRY: the Netherlands
- (F) POSTAL CODE (ZIP): 2651 VG

- (ii) TITLE OF INVENTION: Novel molecules involved in apoptotic pathways.

- (iii) NUMBER OF SEQUENCES: 16

(iv) COMPUTER READABLE FORM:

- (A) MEDIUM TYPE: Floppy disk
- (B) COMPUTER: IBM PC compatible
- (C) OPERATING SYSTEM: PC-DOS/MS-DOS
- (D) SOFTWARE: PatentIn Release #1.0, Version #1.30 (EPO)

(v) CURRENT APPLICATION DATA:

APPLICATION NUMBER: PCT/NL98/00687

(2) INFORMATION FOR SEQ ID NO: 1:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 17 base pairs

- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: other nucleic acid

(iii) HYPOTHETICAL: NO

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 1:

TACCACTACA ATGGATG

17

(2) INFORMATION FOR SEQ ID NO: 2:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 15 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 2:

Arg Asn Gly Gly Gly Glu Val Asp Arg Val Asp Tyr Asp Arg Gln  
1            5            10            15

(2) INFORMATION FOR SEQ ID NO: 3:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 16 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: peptide

(iii) HYPOTHETICAL: NO

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 3:

Cys Gln Leu Arg Lys Glu Leu Gly Asp Ser Pro Lys Asp Lys Val Pro  
1            5            10            15

(2) INFORMATION FOR SEQ ID NO: 4:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 658 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(ix) FEATURE:

- (A) NAME/KEY: misc\_feature
- (B) LOCATION: 579..658
- (D) OTHER INFORMATION: /label= N  
/note= ""N" stands for unknown."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 4:

GGGGGATCAT GGAAGCTGAT AAAGATGACA CACAACAAAT TCTTAAGGAG  
CATTCGCCAG    60

ATGAATTTAT AAAAGATGAA CAAAATAAGG GACTAATTGA TGAAATTACA  
AAGAAAAATA    120

TTCAACTAAA GAAGGAGATC CAAAAGCTTG AAACGGAGTT ACAAGAGGCT  
ACCAAAGAAT    180

TCCAGATTAA AGAGGATATT CCTGAAACAA AGATGAAATT CTTATCAGTT  
GAAACTCCTG    240

AGAATGACAG CCAGTTGTCA AATATCTCCT GTTCGTTTCA AGTGAGCTCG  
AAAGTTCCTT 300

ATGAGATACA AAAAGGACAA GCACTTATCA CCTTTGAAAA AGAAGAAGTT  
GCTCAAAATG 360

TGGTAAGCAT GAGTAAACAT CATGTACAGA TAAAAGATGT AAATCTGGAG  
GTTACGGCCA 420

AGCCAGTTCC ATTAAATTCA GGAGTCAGAT TCCAGGTTTA TGTAGAAGTT  
TCTAAAATGA 480

AAATCAATGT TACTGAAATT CCTGACACAT TCGGTGAAGA TCAAATGAGA  
GACAAACTAG 540

AGCTGAGCTT TTCAAAGTCC CGAAATGGGA GCGGGAGANG TGGACCGCGT  
GGGACTATGA 600

CAGACAGTCC GGGAGTGCAG TCATCACGTT TGGNGGAGAT TGGGAGTGGC  
TGACANNN 658

E 1  
(2) INFORMATION FOR SEQ ID NO: 5:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 719 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(ix) FEATURE:

- (A) NAME/KEY: misc\_feature
- (B) LOCATION: 89..716
- (D) OTHER INFORMATION: /label= N  
/note= "'N" stands for unknown."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 5:

CGGAGTTACA AGAGGCTACC AAAGAATTCC AGATTAAAGA GGATATTCCT  
GAAACAAAGA 60

TGAAATTCTT ATCAGTTGAA ACTCCTGANA ATGACAGCCA GTTGTCAAAT  
ATCTCCTGTT 120

CGTTTCAAGG TGAGCTCGAA AGTTCCTTAT GAGATACAAA AAGGACAATG  
CACTTATCAC 180

CTTTGAAAAA GGAAGAAGTT GCTCAAAATG TGNGTAANGC ATGAGTAAAC  
ATCATGTACA 240

GATAATAAGA TGTAATCTG GAGGTTACGG CCAAAGCCAA GTTCCATTAA  
TATTCAAGGA 300

GTCANGATTC CAGNGTTTAT GCTAGAANGT TTCTAAAAAT GANAATCAAT  
GGTTACTGGA 360

AATTCCTGGA CACATTGCGN TGAAAGATCA AGATGACGAA GACAAACTAA  
GAAGCTGAGC 420

TTTTCAAAAG TCCCGAAANA TGGAAGAGCG GTAGAGGGTG GNACCGCGTG  
NGANCTATGA 480

CAAGACAAGN CCGGGGAAGN TGCAGTCCAT CACGTTTGTN NGAAGATTGG  
ANGTNGGCTG 540

ACCAANGAAT TTTGAAAAAG GAGANGAATT ACCCCTCTTT ANGAGTAANA  
TCAAAACCCT 600

GCCATAANAA GTTNACTGGT TTCNCCCATT ACACAGNANT TACANNTTGA  
NCAANANTAN 660

NCAGGATAAT TTNCAGGGGA ANAATCTNAA GNATGGCAAG NTGACTTCTG  
GACAANGGT 719

(2) INFORMATION FOR SEQ ID NO: 6:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 220 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 6:

His Glu Gly Arg Gly Ile Met Glu Ala Asp Lys Asp Asp Thr Gln Gln  
1 5 10 15

Ile Leu Lys Glu His Ser Pro Asp Glu Phe Ile Lys Asp Glu Gln Asn  
20 25 30

Lys Gly Leu Ile Asp Glu Ile Thr Lys Lys Asn Ile Gln Leu Lys Lys  
35 40 45

Glu Ile Gln Lys Leu Glu Thr Glu Leu Gln Glu Ala Thr Lys Glu Phe  
50 55 60

Gln Ile Lys Glu Asp Ile Pro Glu Thr Lys Met Lys Phe Leu Ser Val  
65 70 75 80

E1  
Glu Thr Pro Glu Asn Asp Ser Gln Leu Ser Asn Ile Ser Cys Ser Phe  
85 90 95

Gln Val Ser Ser Lys Val Pro Tyr Glu Ile Gln Lys Gly Gln Ala Leu  
100 105 110

Ile Thr Phe Glu Lys Glu Glu Val Ala Gln Asn Val Val Ser Met Ser  
115 120 125

Lys His His Val Gln Ile Lys Asp Val Asn Leu Glu Val Thr Ala Lys  
130 135 140

Pro Val Pro Leu Asn Ser Gly Val Arg Phe Gln Val Tyr Val Glu Val  
145 150 155 160

Ser Lys Met Lys Ile Asn Val Thr Glu Ile Pro Asp Thr Leu Arg Glu  
165 170 175

Asp Gln Met Arg Asp Lys Leu Glu Leu Ser Phe Ser Lys Ser Arg Asn  
180 185 190

Gly Arg Arg Arg Cys Gly Pro Arg Gly Thr Met Thr Asp Ser Pro Gly  
195 200 205

Val Gln Ser Ser Arg Leu Val Glu Ile Gly Ser Gly  
210 215 220

(2) INFORMATION FOR SEQ ID NO: 7:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 307 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 7:

Met Glu Ala Asp Lys Asp Asp Thr Gln Gln Ile Leu Lys Glu His Ser  
1            5            10            15

Pro Asp Glu Phe Ile Lys Asp Glu Gln Asn Lys Gly Leu Ile Asp Glu  
20            25            30

Ile Thr Lys Lys Asn Ile Gln Leu Lys Lys Glu Ile Gln Lys Leu Glu  
35            40            45

Thr Glu Leu Gln Glu Ala Thr Lys Glu Phe Gln Ile Lys Glu Asp Ile  
50            55            60

Pro Glu Thr Lys Met Lys Phe Leu Ser Val Glu Thr Pro Glu Asn Asp  
65            70            75            80

Ser Gln Leu Ser Asn Ile Ser Cys Ser Phe Gln Val Ser Ser Lys Val  
85            90            95

Pro Tyr Glu Ile Gln Lys Gly Gln Ala Leu Ile Thr Phe Glu Lys Glu  
100            105            110

Glu Val Ala Gln Asn Val Val Ser Met Ser Lys His His Val Gln Ile  
115            120            125

Lys Asp Val Asn Leu Glu Val Thr Ala Lys Pro Val Pro Leu Asn Ser  
130            135            140

Gly Val Arg Phe Gln Val Tyr Val Glu Val Ser Lys Met Lys Ile Asn

145                      150                      155                      160  
 Val Thr Glu Ile Pro Asp Thr Leu Arg Glu Asp Gln Met Arg Asp Lys  
                                  165                      170                      175  
 Leu Glu Leu Ser Phe Ser Lys Phe Arg Asn Gly Gly Gly Glu Val Asp  
                                  180                      185                      190  
 Arg Val Asp Tyr Asp Arg Gln Ser Gly Ser Ala Val Ile Thr Phe Val  
                                  195                      200                      205  
 Glu Ile Gly Val Ala Asp Lys Ile Leu Lys Lys Lys Glu Tyr Pro Leu  
                                  210                      215                      220  
 Tyr Ile Asn Gln Thr Cys His Arg Val Thr Val Ser Pro Tyr Thr Glu  
                                  225                      230                      235                      240  
 Ile His Leu Lys Lys Tyr Gln Ile Phe Ser Gly Thr Ser Lys Arg Thr  
                                  245                      250                      255  
 Val Leu Leu Thr Gly Met Glu Gly Ile Gln Met Asp Glu Glu Ile Val  
                                  260                      265                      270  
 Glu Asp Leu Ile Asn Ile His Phe Gln Arg Ala Lys Asn Gly Gly Gly  
                                  275                      280                      285  
 Glu Val Asp Val Val Lys Cys Ser Leu Gly Gln Pro His Ile Ala Tyr  
                                  290                      295                      300  
 Phe Glu Glu  
 305

(2) INFORMATION FOR SEQ ID NO: 8:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 659 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO



(ix) FEATURE:

(A) NAME/KEY: misc\_feature

(B) LOCATION:189..657

(D) OTHER INFORMATION:/label= N

/note= ""N" stands for unknown."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 8:

AGCAGGTGCT GCAACAAAAG GAGCACACGA TCAACATGGA GGAGTGCCGG  
CTGCGGGTGC 60

AGGTCCAGCC CTTGGAGCTG CCCATGGTCA CCACCATCCA GGTGTCCAGC  
CAGTTGAGTG 120

GCCGGAGGGT GTTGGTCACT GGATTTCCTG CCAGCCTCAG GCTGAGTGAG  
GAGGAGCTGC 180

TGGACAANCT ANAGATCTTC TTTGGCAAGA CTAGGAACGG AGGTGGCNAT  
GTGGACNTTC 240

GGGANCTACT GCCAGGGANT GTCATGCTGG GGTTTGCTAG GGATGGAGTG  
GCTCANCGTC 300

TGTGCCAAAT CGGCCATTTC ACAGTGCCAC TGGGTGGGCA GCANGTCCCT  
CTGAGAGTCT 360

CTCCGTATGT GAATGGGGAN ATCCAGANGG CTGANATCAG GTCNCAGCCA  
NTTCCCCGCT 420

CGGTACTGGT GCTCAACATT CCTGATATCT TGGATGGCCC GGAGCTGCAT  
GACGTCCTGG 480

ANATCCACTT CCAGAANCCC ACCCGCGGGG GCGGAGATGT AAGACGCCCT  
GACAGTCGTA 540

CCCCAAGGAC AACAGGGCCT AACAGTCTTC ACCTCCTGAA TCAAGGCTAN  
GGGCCTCCCC 600

CTTCTCATCC TCCCCACCCC CCCC GCCAAA GGTCTCAAN ACTGGGCCTG  
GGCTTTNTG 659

(2) INFORMATION FOR SEQ ID NO: 9:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 630 base pairs  
(B) TYPE: nucleic acid  
(C) STRANDEDNESS: unknown  
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(ix) FEATURE:

- (A) NAME/KEY: misc\_feature  
(B) LOCATION:354..621  
(D) OTHER INFORMATION:/label= N  
/note= ""N" stands for unknown."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 9:

CCAAAGTGGC TGAGCAGGTG CTGCAACAAA AGGAGCACAC GATCAACATG  
GAGGAGTGCC 60

GGCTGCGGGT GCAGGTCCAG CCCTTGGAGC TGCCCATGGT CACCACCATC  
CAGGTGTCCA 120

GCCAGTTGAG TGGCCGGAGG GTGTTGGTCA CTGGATTTC TGCCAGCCTC  
AGGCTGAGTG 180

AGGAGGAGCT GCTGGACAAG CTAGAGATCT TCTTTGGCAA GACTAGGAAC  
GGAGGTGGCG 240

ATGTGGACGT TCGGGAGCTA CTGCCAGGGA GTGTCATGCT GGGGTTTGCT  
AGGGATGGAG 300

TGGCTCAGCG TCTGTGCCAA ATCGGCCAAG TTCACAGTGC CACTGGGTGG  
GCANCAAGTC 360

CCTCTGAGAG TCTCTCCGTA TGTGAATGGG GAGATCCAGA AGGCTGAGAT  
CAGGTCGCAN 420

CCAGTTCCCC NCTCGGTACT GGGTGCTCAA CATTCCTGAT ATCTTGGATT  
GGCCCCGGAGC 480

TGCATNACGT CCTGGANATC AACTTCANAA GCCCACC CGGCGCNGNG  
AGGTANAAGG 540

CCTGACATCN TTACCCCAAA GGACAGCATG GNCCTAACAG TCCTCACCTC  
CNAATCANGC 600

TNNGGGGCTN CCCTTCTANC NTCCCAACTG

630

(2) INFORMATION FOR SEQ ID NO: 10:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 631 base pairs
- (B) TYPE: nucleic acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: DNA (genomic)

(iii) HYPOTHETICAL: NO

(ix) FEATURE:

- (A) NAME/KEY: misc\_feature
- (B) LOCATION: 182..626
- (D) OTHER INFORMATION: /label= N  
/note= "'N" stands for unknown."

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 10:

GGATCCACTG CCCTCTGCTT GCGGGCTCTG CTCTGATCAC CTTTGATGAC  
CCCAAAGTGG 60

CTGAGCAGGT GCTGCAACAA AAGGAGCACA CGATCAACAT GGAGGAGTGC  
CGGCTGCGGG 120

TGCAGGTCCA GCCCTTGGAG CTGCCCATGG TCACCACCAT CCAGGTGATG  
GTGTCCAGCC 180

ANTTGAGTGG CCGGAGGGTG TTGGTCACTG GATTTCCTGC CAGCCTCAGG  
CTGANTGAGG 240

AGGAGCTGCT GGACAAGCTA TGAGATCTTC TTTGGCAANA CTANGAACGG  
ANGTGGCGAT 300

GTGGACGTTC GGGAGCTACT GCCAGGGAGT GTCATGCTGG GGTTTGCTAC  
GGATGGAGTG 360

GCTCAGCGTC TGTGCCAAAT CGGCCAGTTC ACAAGTGCCA CTGGGTGGGC  
AGCAAGTCCC 420

TCTGAGAGTC TCTCCGTATG TGANTGGNGA GATCAGAATG CTGANATTAA  
GTCGCATCCA 480

ATTCTCGCT CNGGTACTGG TGCTCANNAT CCTGANATCT TGGATTGGCC  
CCNGANTNCA 540

TGANATCTGG NAGATTCAAT TNCANAAGTC CANCCNNCNG NGNCGGGAAG  
TANANGCCCG 600

ANANTTCNTN NCNTANGGNC AGCANNGCCT G

631

(2) INFORMATION FOR SEQ ID NO: 11:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 138 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: unknown  
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 11:

His Glu Gly Pro Lys Val Ala Glu Gln Val Leu Gln Gln Lys Glu His  
1 5 10 15

Thr Ile Asn Met Glu Glu Cys Arg Leu Arg Val Gln Val Gln Pro Leu  
20 25 30

Glu Leu Pro Met Val Thr Thr Ile Gln Val Ser Ser Gln Leu Ser Gly  
35 40 45

Arg Arg Val Leu Val Thr Gly Phe Pro Ala Ser Leu Arg Leu Ser Glu  
50 55 60

Glu Glu Leu Leu Asp Lys Leu Glu Ile Phe Phe Gly Lys Thr Arg Asn  
65 70 75 80

Gly Gly Gly Asp Val Asp Val Arg Glu Leu Leu Pro Gly Ser Val Met  
85 90 95

Leu Gly Phe Ala Arg Asp Gly Val Ala Gln Arg Leu Cys Gln Ile Gly  
100 105 110

Gln Val His Ser Ala Thr Gly Trp Ala Ser Ser Pro Ser Glu Ser Leu  
115 120 125

Ser Val Cys Glu Trp Gly Asp Pro Glu Gly  
130 135

(2) INFORMATION FOR SEQ ID NO: 12:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 282 amino acids  
(B) TYPE: amino acid  
(C) STRANDEDNESS: unknown  
(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 12:

Met Ser Ala Pro Leu Asp Ala Ala Leu His Ala Leu Gln Glu Glu Gln  
1 5 10 15

Ala Arg Leu Lys Met Arg Leu Trp Asp Leu Gln Gln Leu Arg Lys Glu  
20 25 30

Leu Gly Asp Ser Pro Lys Asp Lys Val Pro Phe Ser Val Pro Lys Ile  
35 40 45

Pro Leu Val Phe Arg Gly His Thr Gln Gln Asp Pro Glu Val Pro Lys  
50 55 60

Ser Leu Val Ser Asn Leu Arg Ile His Cys Pro Leu Leu Ala Gly Ser  
65 70 75 80

Ala Leu Ile Thr Phe Asp Asp Pro Lys Val Ala Glu Gln Val Leu Gln

85

90

95

Gln Lys Glu His Thr Ile Asn Met Glu Glu Cys Arg Leu Arg Val Gln  
100 105 110

Val Gln Pro Leu Glu Leu Pro Met Val Thr Thr Ile Gln Val Ser Ser  
115 120 125

Gln Leu Ser Gly Arg Arg Val Leu Val Thr Gly Phe Pro Ala Ser Leu  
130 135 140

Arg Leu Ser Glu Glu Glu Leu Leu Asp Lys Leu Glu Ile Phe Phe Gly  
145 150 155 160

Lys Thr Arg Asn Gly Gly Gly Asp Val Asp Val Arg Glu Leu Leu Pro  
165 170 175

Gly Ser Val Met Leu Gly Phe Ala Arg Asp Gly Val Ala Gln Arg Leu  
180 185 190

Cys Gln Ile Gly Gln Phe Thr Val Pro Leu Gly Gly Gln Gln Val Pro  
195 200 205

Leu Arg Val Ser Pro Tyr Val Asn Gly Glu Ile Gln Lys Ala Glu Ile  
210 215 220

Arg Ser Gln Pro Val Pro Arg Ser Val Leu Val Leu Asn Ile Pro Asp  
225 230 235 240

Ile Leu Asp Gly Pro Glu Leu His Asp Val Leu Glu Ile His Phe Gln  
245 250 255

Lys Pro Thr Arg Gly Gly Gly Gly Arg Gly Pro Asp Ser Arg Thr Pro  
260 265 270

Arg Thr Ala Gly Pro Ser Ser Leu His Leu  
275 280

## (2) INFORMATION FOR SEQ ID NO: 13:

### (i) SEQUENCE CHARACTERISTICS:

(A) LENGTH: 207 amino acids

(B) TYPE: amino acid

(C) STRANDEDNESS: unknown

(D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 13:

His Glu Gly Arg Ile His Cys Pro Leu Leu Ala Gly Ser Ala Leu Ile  
1 5 10 15

Thr Phe Asp Asp Pro Lys Val Ala Glu Gln Val Leu Gln Gln Lys Glu  
20 25 30

His Thr Ile Asn Met Glu Glu Cys Arg Leu Arg Val Gln Val Gln Pro  
35 40 45

Leu Glu Leu Pro Met Val Thr Thr Ile Gln Val Met Val Ser Ser Xaa  
50 55 60

Leu Ser Gly Arg Arg Val Leu Val Thr Gly Phe Pro Ala Ser Leu Arg  
65 70 75 80

Leu Xaa Glu Glu Glu Leu Leu Asp Lys Leu Asp Leu Leu Trp Gln Xaa  
85 90 95

Xaa Glu Arg Xaa Trp Arg Cys Gly Arg Ser Gly Ala Thr Ala Arg Glu  
100 105 110

Cys His Ala Gly Val Cys Tyr Gly Trp Ser Gly Ser Ala Ser Val Pro  
115 120 125

Asn Arg Pro Val His Lys Cys His Trp Val Gly Ser Lys Ser Leu Glu  
130 135 140

Ser Leu Arg Met Xaa Xaa Arg Ser Glu Cys Xaa Val Ala Ser Asn Ser  
145 150 155 160

Ser Leu Xaa Tyr Trp Cys Ser Xaa Ser Xaa Leu Gly Leu Ala Pro Xaa  
165 170 175

Xaa Met Xaa Ser Gly Arg Phe Asn Xaa Xaa Ser Pro Xaa Xaa Xaa Xaa  
180 185 190

Gly Lys Xaa Xaa Pro Xaa Xaa Ser Xaa Xaa Xaa Xaa Ser Xaa Ala  
 195                      200                      205

(2) INFORMATION FOR SEQ ID NO: 14:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 647 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 14:

Arg Leu Arg Asn Gly His Val Gly Ile Ser Phe Val Pro Lys Glu Thr  
 1                      5                      10                      15

Gly Glu His Leu Val His Val Lys Lys Asn Gly Gln His Val Ala Ser  
 20                      25                      30

Ser Pro Ile Pro Val Val Ile Ser Gln Ser Glu Ile Gly Asp Ala Ser  
 35                      40                      45

Arg Val Arg Val Ser Gly Gln Gly Leu His Glu Gly His Thr Phe Glu  
 50                      55                      60

Pro Ala Glu Phe Ile Ile Asp Thr Arg Asp Ala Gly Tyr Gly Gly Leu  
 65                      70                      75                      80

Ser Leu Ser Ile Glu Gly Pro Ser Lys Val Asp Ile Asn Thr Glu Asp  
 85                      90                      95

Leu Glu Asp Gly Thr Cys Arg Val Thr Tyr Cys Pro Thr Glu Pro Gly  
 100                      105                      110

Asn Tyr Ile Ile Asn Ile Lys Phe Ala Asp Gln His Val Pro Gly Ser  
 115                      120                      125

Pro Phe Ser Val Lys Val Thr Gly Glu Gly Arg Val Lys Glu Ser Ile

E1



130                      135                      140  
 Thr Arg Arg Arg Arg Ala Pro Ser Val Ala Asn Val Gly Ser His Cys  
 145                      150                      155                      160  
 Asp Leu Ser Leu Lys Ile Pro Glu Ile Ser Ile Gln Asp Met Thr Ala  
                     165                      170                      175  
 Gln Val Thr Ser Pro Ser Gly Lys Thr His Glu Ala Glu Ile Val Glu  
                     180                      185                      190  
 Gly Glu Asn His Thr Tyr Cys Ile Arg Phe Val Pro Ala Glu Met Gly  
                     195                      200                      205  
 Thr His Thr Val Ser Val Lys Tyr Lys Gly Gln His Val Pro Gly Ser  
                     210                      215                      220  
 Pro Phe Gln Phe Thr Val Gly Pro Leu Gly Glu Gly Gly Ala His Lys  
 225                      230                      235                      240  
 Val Arg Ala Gly Gly Pro Gly Leu Glu Arg Ala Glu Ala Gly Val Pro  
                     245                      250                      255  
 Ala Glu Phe Ser Ile Trp Thr Arg Glu Ala Gly Ala Gly Gly Leu Ala  
                     260                      265                      270  
 Ile Ala Val Glu Gly Pro Ser Lys Ala Glu Ile Ser Phe Glu Asp Arg  
                     275                      280                      285  
 Lys Asp Gly Ser Cys Gly Val Ala Tyr Val Val Gln Glu Pro Gly Asp  
                     290                      295                      300  
 Tyr Glu Val Ser Val Lys Phe Asn Glu Glu His Ile Pro Asp Ser Pro  
 305                      310                      315                      320  
 Phe Val Val Pro Val Ala Ser Pro Ser Gly Asp Ala Arg Arg Leu Thr  
                     325                      330                      335  
 Val Ser Ser Leu Gln Glu Ser Gly Leu Lys Val Asn Gln Pro Ala Ser  
                     340                      345                      350  
 Phe Ala Val Ser Leu Asn Gly Ala Lys Gly Ala Ile Asp Ala Lys Val  
                     355                      360                      365  
 His Ser Pro Ser Gly Ala Leu Glu Glu Cys Tyr Val Thr Glu Ile Asp

370

375

380

Gln Asp Lys Tyr Ala Val Arg Phe Ile Pro Arg Glu Asn Gly Val Tyr  
385 390 395 400

Leu Ile Asp Val Lys Phe Asn Gly Thr His Ile Pro Gly Ser Pro Phe  
405 410 415

Lys Ile Arg Val Gly Glu Pro Gly His Gly Gly Asp Pro Gly Leu Val  
420 425 430

Ser Ala Tyr Gly Ala Gly Leu Glu Gly Gly Val Thr Gly Asn Pro Ala  
435 440 445

Glu Phe Val Val Asn Thr Ser Asn Ala Gly Ala Gly Ala Leu Ser Val  
450 455 460

Thr Ile Asp Gly Pro Ser Lys Val Lys Met Asp Cys Gln Glu Cys Pro  
465 470 475 480

E1  
Glu Gly Tyr Arg Val Thr Tyr Thr Pro Met Ala Pro Gly Ser Tyr Leu  
485 490 495

Ile Ser Ile Lys Tyr Gly Gly Pro Tyr His Ile Gly Gly Ser Pro Phe  
500 505 510

Lys Ala Lys Val Thr Gly Pro Arg Leu Val Ser Asn His Ser Leu His  
515 520 525

Glu Thr Ser Ser Val Phe Val Asp Ser Leu Thr Lys Ala Thr Cys Ala  
530 535 540

Pro Gln His Gly Ala Pro Gly Pro Gly Pro Ala Asp Ala Ser Lys Val  
545 550 555 560

Val Ala Lys Gly Leu Gly Leu Ser Lys Ala Tyr Val Gly Gln Lys Ser  
565 570 575

Ser Phe Thr Val Asp Cys Ser Lys Ala Gly Asn Asn Met Leu Leu Val  
580 585 590

Gly Val His Gly Pro Arg Thr Pro Cys Glu Glu Ile Leu Val Lys His  
595 600 605

Val Gly Ser Arg Leu Tyr Ser Val Ser Tyr Leu Leu Lys Asp Lys Gly

610                      615                      620  
 Glu Tyr Thr Leu Val Val Lys Trp Gly His Glu His Ile Pro Gly Ser  
 625                      630                      635                      640  
 Pro Tyr Arg Val Val Val Pro  
 645

(2) INFORMATION FOR SEQ ID NO: 15:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 213 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 15:

His Glu Gly Arg Gly Val Thr Gly Asn Pro Ala Glu Phe Val Val Asn  
 1                      5                      10                      15  
 Thr Ser Asn Ala Gly Ala Gly Ala Leu Ser Val Thr Ile Asp Gly Pro  
 20                      25                      30  
 Ser Lys Val Lys Met Asp Cys Gln Glu Cys Pro Glu Gly Tyr Arg Val  
 35                      40                      45  
 Thr Tyr Thr Pro Met Ala Pro Gly Ser Tyr Leu Ile Ser Ile Lys Tyr  
 50                      55                      60  
 Gly Gly Pro Tyr His Ile Gly Gly Ser Pro Phe Lys Ala Lys Val Thr  
 65                      70                      75                      80  
 Gly Pro Arg Leu Val Ser Asn His Ser Leu His Glu Thr Ser Ser Val  
 85                      90                      95  
 Phe Val Asp Ser Leu Thr Lys Ala Thr Cys Ala Pro His His Gly Ala  
 100                      105                      110

Pro Gly Pro Gly Pro Ala Asp Ala Ser Lys Val Val Ala Lys Gly Leu  
115 120 125

Gly Leu Ser Lys Ala Tyr Val Cys His Lys Ser Ser Phe Thr Val Asp  
130 135 140

Cys Ser Lys Ala Cys Ile Ile Met Leu Leu Val Gly Val His Gly Pro  
145 150 155 160

Trp Thr Pro Cys Asp Glu Ile Leu Val Lys Ala Arg Gly Gln Pro Ala  
165 170 175

Leu Gln Arg Val Leu Thr Cys Phe Lys Asp Lys Gly Glu Val His Thr  
180 185 190

Gly Gly Gln Asn Gly Gly Asp Tyr Gln Ile Pro Cys Lys Pro Leu Pro  
195 200 205

Leu Cys Gly Cys Pro  
210

E1  
(2) INFORMATION FOR SEQ ID NO: 16:

(i) SEQUENCE CHARACTERISTICS:

- (A) LENGTH: 213 amino acids
- (B) TYPE: amino acid
- (C) STRANDEDNESS: unknown
- (D) TOPOLOGY: unknown

(ii) MOLECULE TYPE: protein

(iii) HYPOTHETICAL: NO

(xi) SEQUENCE DESCRIPTION: SEQ ID NO: 16:

His Glu Gly Arg Pro Thr Glu Pro Gly Asn Tyr Ile Ile Asn Ile Lys  
1 5 10 15

Phe Ala Asp Gln His Val Pro Gly Ser Pro Phe Ser Val Lys Val Thr  
20 25 30

Gly Glu Gly Arg Val Lys Glu Ser Ile Thr Arg Arg Arg Ala Pro

35

40

45

Ser Val Ala Asn Val Gly Ser His Cys Asp Leu Ser Leu Lys Ile Pro  
50 55 60

Glu Ile Ser Ile Gln Asp Met Thr Ala Gln Val Thr Ser Pro Ser Gly  
65 70 75 80

Lys Thr His Glu Ala Glu Ile Val Glu Gly Glu Asn His Thr Tyr Cys  
85 90 95

Ile Arg Phe Val Pro Ala Glu Met Gly Thr His Thr Val Ser Val Lys  
100 105 110

Tyr Lys Gly Gln His Val Pro Gly Ser Pro Phe Gln Phe Thr Val Gly  
115 120 125

Pro Leu Gly Glu Gly Gly Ala His Xaa Val Arg Ala Gly Gly Pro Gly  
130 135 140

Leu Xaa Lys Ser Ser Trp Ser Ala Ser Arg Ile Gln Tyr Leu Gly Pro  
145 150 155 160

Gly Lys Leu Val Leu Glu Ala Trp Pro Leu Leu Ser Xaa Ala Pro Ala  
165 170 175

Xaa Leu Xaa Ser Leu Leu Arg Thr Ala Arg Thr Ala Pro Val Val Leu  
180 185 190

Leu Met Leu Val Xaa Glu Pro Ser Asp Xaa Asn Pro Xaa Gln Val Ser  
195 200 205

Thr Lys Glu His Xaa  
210

E1  
concludes